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EXAMINER	
MITRA, RITA	
ART UNIT	**PAPER NUMBER**
1656	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/14/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/14/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

Office Action Summary	Application No.	Applicant(s)	
	10/511,627	EULENBERG ET AL.	
	Examiner	Art Unit	
	Rita Mitra	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *34-64* is/are pending in the application.

4a) Of the above claim(s) *35-41,44-50,52-58,61 and 64* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *34, 42, 43, 51, 59, 60, 62, 63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Applicants' amendment and response to office action mailed August 11, 2006, filed on December 11, 2006, is acknowledged. Amendment in the specification is noted. Claims 1-33 have been canceled. New claims 34-64 have been added. Therefore, claims 34-64 are currently under examination.

Response to Amendments and Remarks

Restriction Election

Applicants comment at page 12 of the 'Response' that the method claims and composition claims all recite CG7956 and thus they share a special technical feature and should both be considered in the present application. Applicants' attention is drawn to the Restriction Requirement (mailed May 22, 2006) and response to traversal given in office action mailed on August 11, 2006.

Applicants had elected group X(ii), claims 25, 27 and 33 with traverse. Applicants had also elected CG7956 (synaptojanin-like protein SAC) as the polypeptide. The traversal was on the ground(s) that group I(viii) should be examined together with group X(ii). Group I(viii) is directed to a pharmaceutical composition comprising a CG7956 polypeptide and thus is the composition used in the claims of group X(ii). The reasons for traversal was fully considered and found persuasive. Claim 27 requires use of a polypeptide of claim 1 directly for the preparation of a medicament for treatment and not drawn to the same polypeptide of claim 25 or 33. It should be noted that group X(ii) requires further restriction to X(ii a) claims 25 and 33 and X(ii b), claim 27 because the polypeptide of claim 25 and 33 have different structure and function from the polypeptide of claim 27 thus they are patentably distinct. In the restriction requirement

(May 22, 2006) claims 25 and 33 were joined with claim 27 inadvertently. Regarding the species election Applicants elected diabetes as the disorder.

Claims 1, 8, 9, 11-13 and 31 of Group I(viii) were rejoined as they read on CG7956 polypeptide.

It should be also noted that the elected claims encompass i) the composition comprising CG7956 polypeptide not the CG7956 nucleic acids, ii) use of said polypeptide for the preparation of medicament for treatment and iii) the use of said polypeptide for the treatment of diseases, this is an intended use and not the method of treatment comprising administering CG7956 nucleic acid molecule or polypeptide encoded thereby to a patient as claimed in the newly added claims. Moreover new claims encompass gene therapy, which is a non-elected invention.

Therefore, claims 35-41, 44-50, 52-58, 61-48, 52-58, 61 and 64 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. New claims 49 and 50 are totally new groups, claims do not read on method of use or there is proper use of CG7956. Claims 34, 42, 43 and 51, 59, 60, 62 and 63 read on nucleic acid and polypeptide, however only polypeptide part of these claims are under examination. Therefore, claims 34, 42, 43, 51, 59, 60, 62 and 63 are under examination on the merits.

The restriction requirement still deemed proper and is therefore made FINAL.

Objections/ Rejections Withdrawn

Objection to the specification

Objection to the specification is withdrawn in view of amendment to the specification.

Objection to the claims

Cancellation of claims 1, 25, 31 and 33 renders the objection moot.

Claim Rejections - 35 USC § 112, first paragraph

Cancellation of claims 1, 8, 9, 11-13, 25, 27, 31, 33 renders the rejection moot.

Claim Rejections - 35 USC § 112, second paragraph

Cancellation of claims 1, 8, 9 11-13, 27 renders the rejection moot.

Claim Rejections - 35 USC § 102

Cancellation of claims 1, 8, 11, 12 and 27 renders the rejection moot.

New Ground(s) of Rejection

Objection to the Claims

Claims 42 and 43 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 43 depending upon claim 42 recites 'fusion polypeptide', which does not constitute a further limitation because claim 42 recites a 'recombinant polypeptide'.

Claim 42 depending upon claim 34 recites 'recombinant polypeptide', which does not constitute a further limitation because claim 34 recites a 'polypeptide'.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 34, 42, 43, 51, 59, 60, 62 and 63 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The invention is drawn to a pharmaceutical composition comprising a polypeptide encoded by CG7956 nucleic acid molecule, for the treatment, alleviation and/or prevention (i.e., not occurring even the first time) of metabolic diseases, such as diabetes. However, the skilled artisan cannot necessarily envision the CG7956 that have functional activity the same as the wild-type CG7956 because nowhere in the specification it is described which amino acids are essential and critical for the wild-type protein to maintain its functionality, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the methods of making the claimed invention. The compound itself is required.

The factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands* 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir., 1988). The court in Wands states: "Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not

'experimentation.' " (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed invention cannot be predicted on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

In the instant case the quantity of experimentation would be large because of the nonspecificity of the starting material. The amount of guidance in the specification is zero with regard to which amino acids in CG7956 are essential for activity. No working examples are present for the method and composition comprising the CG7956 proteins, which can be used for treatment or prevention of diseases. The nature of the invention is such that many different proteins that are substantially similar to CG7956 may or may not have biological activity. The state of the prior art is that even proteins that are 99.99% similar to the wild-type protein are at times not fully active; then how with only 52% homology of human Sac domain-containing inositol phosphatase (SAC2, also referred to as KIAA0966 protein; NP_055752) protein, which is a human homolog of the gene product of Drosophila Accession Number CG7956 protein would enable the invention (see page 55 and Table 1 of the specification). The relative level of

skill in this art is very high. The predictability as to what substantially similar protein will have which activity is zero.

When the factors are considered in their entirety, the Wands analysis dictates a finding of undue experimentation and thus, the claims are not enabled.

Claims 34, 42, 43 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an use of a composition comprising polypeptide CG7956 for the preparation of medicament for treatment, does not reasonably provide enablement for a method for treatment, alleviation and/or prevention (not even occurs at the first time) of metabolic diseases comprising administering a CG7956 polypeptide to a patient in need of such treatment. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Claims 34, 42 and 43 are directed to a method for treating/preventing of metabolic diseases in a patient in need of such treatment comprising administering a CG7956 polypeptide to said patient. The specification, however, only discloses cursory conclusions without data supporting the findings, which states that the instant invention relates to use of 'proteins of the invention' in diagnosis, prevention/treatment of metabolic diseases and dysfunctions, for example obesity, diabetes, metabolic syndrome, eating disorder, cachexia, hypertension, coronary heart disease, hypercholesterolemia, dyslipidemia, osteoarthritis or gallstones. A person having skill in the art may have to assess any metabolic disorder e.g. inborn error of metabolism. (page 9, lines 4-16).

There are no indicia that the present application enables the full scope in view of the method of treatment or prevention of metabolic diseases and dysfunction disorders using CG7956 polypeptide which is as discussed in the stated rejection. The present application

provides no indicia and no teaching/guidance as to how the full scope of the claims is enabled. However, the specification only describes the human homologous genes and proteins of CG7956 (Table 1, Example 3); expression of said proteins in mammalian tissues (Example 6), there is no disclosure or description of the use of CG7956 for treating metabolic diseases. There are no working examples indicating the claimed methods in association with the protein. Moreover, the specification has not shown the treating conditions using these polypeptides.

Furthermore, the specification does not provide any specific guidance on treating conditions such as the patient population, dosage, regimen, routes of administration, the time and the treatment schedule as well as the effect of the proteins, nor indicated the expected outcome of treatment. There is description on how to prevent the disease, e.g. if the disease does not occur, how to monitor it. Since the specification fails to provide sufficient guidance on the treating conditions for the polypeptide, it is necessary to have additional guidance to carry out further experimentation to assess the effect of CG7956, which is used for the treatment, and to carry out further experimentation to assess the effect the polypeptide in the in vivo treatment. Without more guidance from the specification it would require undue and excessive experimentation for a person having skill in the art to be able to make and use the claimed method. Since the specification has not described the treating conditions for treating various disorders, nor has demonstrated the effect of polypeptide in treating or preventing various disorders, the invention is highly unpredictable regarding the outcome of the treatment.

The breadth of the claims is broad and encompasses an unspecified number of metabolic diseases or disorders, for example obesity, diabetes, metabolic syndrome, eating disorder, cachexia, hypertension, coronary heart disease, hypercholesterolemia, dyslipidemia, osteoarthritis or gallstones. A person having skill in the art may have to assess any metabolic disorder e.g. inborn error of metabolism.

Thus, further experimentation is required to make and use the claimed invention.

In summary, the scope of the claim is broad, while the working example does not demonstrate the claimed method, the guidance/the teaching in the specification is limited, and the outcome is unpredictable using claimed polypeptide composition, therefore, it is necessary to have additional guidance and to carry out further experimentation to assess the effect of the treatment using a CG7956 polypeptide.

Based on this analysis, the finding of undue experimentation is mandated.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 34, 43, 60 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 34, the term "including" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claim 34, the phrase "as well as" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 43 recites the limitation "said recombinant polypeptide" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 60 recites the limitation "said recombinant polypeptide" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claims 34, 42, 43 are indefinite because the claim lacks essential steps in the method of treating or preventing a metabolic disease/disorder. The omitted step is the outcome of the method. The term "treating or preventing metabolic disease" is not the end point of the method

because it does not indicate the effect of the polypeptide administered, thus it is not clear whether the treatment is effective. Claims 42 and 43 are included in this rejection for being dependent on a rejected claim and not correcting the deficiency of the claim from which they depend.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 34, 42, 51, 59, 62 and 63 are rejected under 35 U.S.C. 102(b) as being unpatentable over Nagase et al. (DNA Research, Vol. 6 (1), pp 63-70, 1999).

Nagase et al. teach the complete sequences of 100 new cDNA clones from human brain which code for large proteins *in vitro*. The corresponding genes were named as KIAA0919-KIAA1018. Nagase's KIAA0966 is 4924 bp in length with corresponding open reading frame

(ORF) of 1132 amino acid residues (see abstract, Fig. 1, Table 1). KIAA0966 DNA has 99.1% sequence identity to nucleic acid sequence of cDNA NM_014937, which is a human homolog of Drosophila gene Accession NO: CG7956 (see sequence alignment data of NM_014937, result 3, Database: GenEmbl, Accession NO: AB023183), and the KIAA0966 polypeptide encoded by the KIAA0966 cDNA has 100% sequence identity to amino acid sequence of protein Sac domain containing inositol phosphatase2 (SAC2) in Accession NO: NP_055752. SAC2 is a human homolog of Drosophila gene Accession NO: CG7956 (see sequence alignment data of NP_055752, result 2, Database: GenEmbl, Accession NO: AB023183, frame search), also see Table 1 at page 54 of the specification. This addresses claims Since Nagase's KIAA0966 protein has 100% sequence identity to SAC2 protein of instant application, it would have been obvious that the composition containing KIAA0966 protein of Nagase must also be able to use for diagnostic composition (claim 62) and therapeutic composition (claim 63). Further this would have led one of ordinary skill in the art for the preparation of a composition for treatment of metabolic diseases or dysfunctions. Thus as a whole, Applicants' invention was prima facie obvious.

Regarding the test results attached to the 'Response' are not considered because the elected claims are not drawn to vectors.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rita Mitra whose telephone number is 571-272-0954. The examiner can normally be reached on M-F, 10:00 am-7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rita Mitra, Ph.D.
February 24, 2007

JON WEBER
SUPERVISORY PATENT EXAMINER